Evaluating the Effectiveness of Maryland's Best Management Practices for Forest Harvest Operations

Executive Summary

Two small forested watersheds located on Sugarloaf Mountain in Frederick County, Maryland were monitored from August 1995 until July 1999 as part of a paired watershed study to evaluate the effectiveness of Maryland's Best Management Practices (BMPs) for timber harvest operations. The study was designed to test the hypothesis that forest harvest operations have no long-term significant impacts on stream benthos, temperature, and suspended sediment if forestry BMPs are implemented. One watershed was designated as the "treatment" watershed, which was partially harvested after a one year calibration period. The second watershed was designated as a control, with no harvesting or other manmade disturbance taking place. Monitoring stations were established on the lower reaches of both watersheds, with biweekly baseflow and storm event water quality samples collected at each station and analyzed for total suspended solids. Automated recording temperature meters were installed in both watersheds. Benthic macroinvertebrate samples were taken in both watersheds each spring and fall. Photographic stations were also set up to document impacts of storm events on BMPs. Calibration period data exhibited a strong linear relationship between watersheds for both storm event suspended sediment concentrations and temperature. Following the calibration period roads, trails, landings, and stream crossings were installed or improved according to Maryland's BMPs. Timber was harvested in 1997 on seven sections of the treatment watershed, totaling 73 acres, using a variety of silvicultural prescriptions. Following harvest, disturbed areas were stabilized where required by Maryland BMPs. Monitoring of baseflow and stormflow suspended sediment samples, temperature, and benthic macroinvertebrates continued throughout the harvest and post-harvest period. Weather during the four year term of this study varied from extremely dry to extremely wet. Analysis of total suspended solids indicated no significatn change between the calibration period and the treatment period. Stream temperature and benthic macroinvertebrate populations also did not indicate a significant change as a result of harvesting. Installation costs are highly dependent upon local weather and site conditions. Logger awareness and training is critical to effective use of BMPs, since implementation and installation are ultimately under their control.

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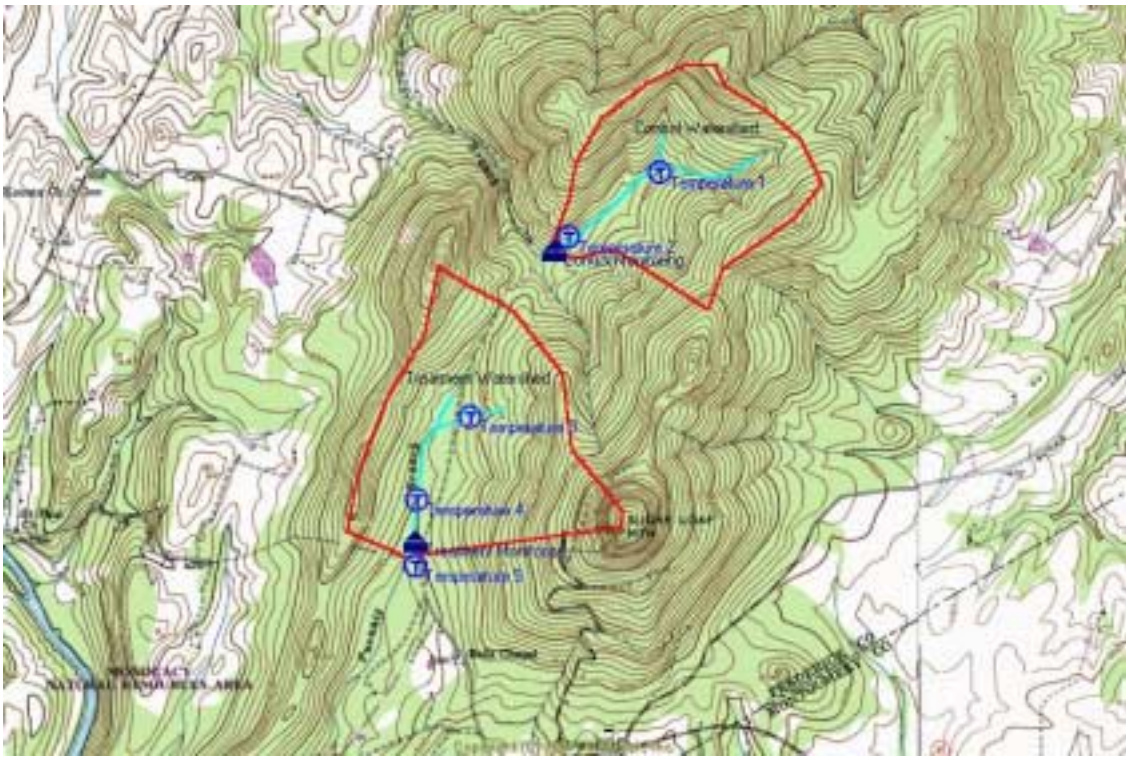
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